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ART. V. — SOUL AND SUBSTANCE.

SCIENCE thus far may be said to have dealt exclusively with the world of the senses. Concerning things which can be seen, touched, weighed, and measured, it has accumulated an immense store of information. By the aid of the telescope it has sounded the depths of the starry universe, and with the microscope it has examined the minutest forms of insect life. It has computed the bulk of the planets, the dimensions of the ultimate atoms of matter, and the length of the waves of light. It analyses the composition of the sun as it does that of the food we eat, and explains with equal clearness the tides of the ocean and the circulation of the blood. But of the vast inner world with which the soul is immediately concerned, it has as yet discovered nothing. Our knowledge of the realm of thought and emotion is no greater than was that of Plato and Aristotle, and the term metaphysics is now, as it always has been, a synonyme for baseless speculation. The result is, that multitudes utterly deny the existence of anything within and above sensible matter, and refer all mental action to modifications of the bodily organs, while the belief of others in regard to the subject is rather an inherited superstition than a conviction of reason. Is there any hope that this ignorance may be dispelled, and a way be found out of the darkness which surrounds us?

In considering this question we ought to bear in mind that it is only a comparatively short time since science, as we now have it, emerged from chaos. Two hundred and fifty years ago all the university professors in Christendom were teaching that the speed of falling bodies was proportioned to their weight, and that the shape of substances floating in liquids was the cause of their buoyancy. The rising of water in a pump was attributed to Nature's abhorrence of a vacuum, and the upward course of smoke to the aspiration of fire for the sun. The Copernican system of astronomy was the subject of hot debate, and its final acceptance far from assured. The nature of light, electricity, and magnetism was

unknown, and chemistry was only an amusement or a means of imposture. The immense progress we have since made is owing to the adoption of the analytic instead of the synthetic method of investigation, — the system of ascertaining the facts first and then drawing conclusions from them, instead of first constructing a theory and thence inferring the facts. Whenever a similar course is commenced and pursued in reference to the nature and operations of the soul, we may possibly get some accurate knowledge respecting them. At present our men of science decline to consider whatever they cannot subject to mechanical investigation, and either explain away or flatly deny phenomena which, treated in a more philosophical spirit, might put them on the track of important discoveries.

Not that there is any lack of zeal in examining the organs by which the soul operates. The press teems with books detailing at length all sorts of experiments, many of them so cruel as to have provoked popular indignation, which have been undertaken for the purpose of ascertaining how the brain and nerves are constructed and discharge their functions. Frogs, rabbits, dogs, cats, pigeons, monkeys, and even human beings have had their skulls cut open, and been carved and tortured in various ways in order to find out the nature and processes of mental action. Some of the results obtained are valuable, and all of them may eventually prove so, but the most that has yet been determined is that when the soul acts the body is affected, and that when the body is affected in certain ways, the soul experiences certain sensations. But how the two things are related is still a mystery. Professor Tyndall remarked, nine years ago : “ Granted that a definite thought and a definite molecular action in the brain occur simultaneously, we do not possess the intellectual organ, nor apparently any rudiment of the organ, which would enable us to pass, by a process of reasoning, from the one to the other. They appear together, but we do not know why.”* Mr. John Fiske says : “ We know of mind only as a group of activities which are never exhibited to us except through the medium of motions of matter.”† And the very latest treatise on the brain tells us that “ we may succeed in determining the exact nature of the molecular changes which occur in the

* Address delivered at Norwich, August 19, 1868.

† The Unseen World, and other Essays.

brain-cells when a sensation is experienced, but this will not bring us one whit nearer the explanation of what constitutes the ultimate nature of sensation. The one is objective and the other subjective, and neither can be expressed in terms of the other." * Science thus confesses itself baffled when it attempts to pass the limits of physical demonstration, and declares its inability to explain the nature of the soul.

But may it not be that this inability has been conceded without reason, and that, reversing the experience of the Indian in the legend, our scientific inquirers have assumed that to be an imaginary phantom which, after all, is a real substance? It is true that metaphysicians have for ages denied to mind the possession of any qualities common to or resembling those of matter, and have thus deprived it of every attribute of substantial existence, but theirs is a purely unsupported dictum. The little we know of the subject indicates rather the contrary of their teaching, and points to the conclusion that mind, while differing from what is usually called matter, has enough in common with it to render it a subject of scientific investigation.

All the revelations of science go to demonstrate the unity of creation, and the arrangement of its various kingdoms into an organic whole, with intermediate gradations, by which one kingdom passes insensibly into another. The human frame itself is composed of organisms of various degrees of fineness, from the delicate substances of the brain down to hard and almost lifeless bone, and they are interwoven one with another in the most marvellous manner. All animals are like man in structure and physiological functions. Vegetables resemble animals in various respects. They have, in a modified way, an arrangement of parts, and a digestion, circulation, and respiration like that of animals. Minerals spontaneously crystallize into forms emulating those of vegetables. They make up the substance of vegetable matter, and through it help to compose the animal frame. Nor was it an altogether unreasonable fancy which saw in this great globe itself, with its ceaseless motion and flux and reflux of forces, a living animal. The evaporation of its waters, their descent in snow and rain, and their return in countless brooks and rivers to the ocean, are the circulation of its blood; the winds that sweep over it are its breath of

* Ferrier, *Functions of the Brain*, Chap. XI.

life ; and the silent decay and renewal which go on upon its surface, its waste and digestion. The distinction again between solids, liquids, and gases is one of degree, and not of kind. A little more or a little less heat is all that makes the difference between them, and matter is constantly passing from one of these forms into another. The forces of nature, too, we now know to be but modifications of one common force — heat, light, electricity, magnetism, and chemical affinity being mutually interconvertible. The waves of air which produce sound are paralleled on the one side by the circles which a stone makes when thrown into still water, and on the other by the vibrations of an invisible medium which reaches to the stars, and constitutes the vehicle of light. The phenomena of electricity, magnetism, and gravitation point to the existence of a yet subtler fluid, the characteristics of which are still undiscovered. Since, therefore, the whole universe, as seen by the aid of science, reveals a common plan, it is unreasonable to draw the line at a particular point and say that here that plan ends and something distinctly different begins its sway. Is it not more philosophical to conclude that the world beyond the grasp of the physical senses resembles that within it, that the soul is like the body in construction and operation, and that it is affected by agencies similar to those by which the body is affected, than to suppose everything of a spiritual nature to be so completely discriminated from the rest of creation that we can form no conception of it ?

In this, as in many other cases, the instincts of mankind are truer than the refinements of education. The languages of all nations, ancient and modern, attest the fact that mind, so far from having no likeness to matter, may be thought of and described as if it were matter. We speak of the feelings of the soul as we do of those of the body, of mental sight and hearing, of grasping and weighing arguments, of being touched and hurt, wearied and refreshed, weak and strong, in soul as in body, of spiritual motion upward and downward, forward and backward, of warm and cold affections, of hardness and softness of character, of bitter, sweet, sharp, and blunt words, and so on through the whole list of material qualities. All the phrases by which we attempt to convey to others intellectual ideas are taken from material images, and without such help conversation on any but the lowest topics would be impossible. It will, of course, be objected that these are mere fig-

ures of speech from which no scientific conclusion ought to be drawn; but their universal and spontaneous adoption is a fact which science has no right to neglect. It is inconceivable that these forms of expression should have obtained such general currency, if mankind had not recognized their appropriateness.

Individual thinkers have, at rare intervals, perceived this resemblance between matter and mind, and attempted to make a practical use of it. Spinoza, long ago, declared that "the order and connection of ideas is the same as the order and connection of things,"* and he announced as his purpose: "I shall treat of the nature and strength of the affections, and of the power of the mind over them, in the same way that I have already treated of God and the mind; and I shall consider human actions and appetites exactly as if the questions were concerning lines, planes, and bodies."† In following out the principle, he fails to satisfy the understanding, because he was little instructed in the natural sciences, and because he identifies matter with mind in a way that contradicts our consciousness. A century after Spinoza was born, Swedenborg took up the same idea. He had the advantage over Spinoza of as thorough a scientific education as was attainable in his time. He knew astronomy, chemistry, mineralogy, physics, natural history, and, last but not least, he was a diligent student of anatomy and physiology. In a little essay on the mechanism of the intercourse between the soul and the body, which he published in 1734, he lays down the proposition that the soul is subject to mechanical and geometrical laws; and he expresses the hope, that with the aid of known facts concerning the human body and its parts, as well as those concerning the operations of the soul, he may arrive at sure conclusions respecting "the geometry and mechanism of this most perfect entity." Ten years later he published the fruits of his labors in a work entitled "The Economy of the Animal Kingdom." By reasoning and deductions from anatomy and physiology, he attempted to show that the soul is an organized substance, constituting the inmost of the body, and weaving upon itself, out of successively coarser and coarser elements, the whole human frame. Perceiving, too, the analogy of sound to light, he went on to infer the existence both of a subtle

* Ethics, Part II. Prop. VII.

† Ibid., Part III., Preface.

magnetic ether, by the vibrations of which the organism next above the external senses is affected, and of still other and finer ethers serving to communicate with still more recondite sensory faculties. The prosecution of his researches was cut short by what he alleged to be an actual experience of the realities of the inner world, and a religious mission founded upon it; so that his subsequent productions belong to another domain than that of science. No one since seems to have taken up the thread he dropped, but in the hands of a competent explorer it may yet be made useful.

The simple fact that the body yields, as we know it does, to the soul, and is used as its instrument, goes to show that there is a community of nature between them. A man is sitting quietly in a chair, and it occurs to him that it would be pleasant to read a book which lies on the table at his side. He accordingly reaches out his hand, takes the book, opens it, directs his eyes to the printed page, receives the impression of the words, through the retina, on the brain, and, finally, translates those words into ideas. The physiologist explains all the steps of the operation, from the first motion of the muscles to the final modification of the brain-cells, and there, as we have seen, he stops. But he admits that behind the muscles and the brain there is something, not muscle nor brain, which is the real actor in the business. It is plain that this something must be a real thing, and it is equally plain that it could not affect the body, did it not possess in common with it a certain degree of substantiality. A mere abstraction could not set in motion ever so fine a tissue or fibre, any more than a summer breeze could waft away a granite boulder.

What is thus true of voluntary actions is equally true of emotions, such as sorrow, joy, anger, and the like. Intelligence of some sad event, for example, is conveyed to a person in a state of perfect composure. Straightway his face is distorted, tears gush from his eyes, and his lungs give forth sobs and cries. We can readily comprehend the various stages of the phenomenon from the impression of the sounds of the spoken words on the brain down to the spasmodic contractions of the muscles which produce the outward marks of grief; why should we hesitate to acknowledge that within is a real substance, undergoing corresponding modifications? The mere vibrations of the air made by the voice of the bearer of the tidings is not enough, by itself, to account for

what we see ; otherwise, it would equally follow the utterance of his message in an unknown language. The soul has to receive the news and be affected by it before the emotion which the body exhibits can be manifested. Why is not a thing capable of such action, and of such control of the body as real and substantial as the body itself ? All other emotions, likewise, have their appropriate methods of bodily expression, which everybody instantly recognizes and interprets as indicating mental and not physical conditions. Habitual states of the mind produce habitual states of the countenance, from which we do not hesitate to infer mental character, thus instinctively treating the body as the outward sign of an inner reality.

Less familiar, but still quite common, are examples of the influence of the soul, not merely over the actions, but also over the internal organs of the body. When our attention is deeply interested, we involuntarily hold the breath, and a sudden shock of fear will stop the beating of the heart. Shame and anger send the blood in a hot flush to the cheek, while fear blanches it with pallor and bedews the forehead with cold perspiration. Vexation will arrest the digestion, and, if prolonged, produce a permanent dyspepsia, while pleasant company and cheerful conversation at a meal promote the assimilation of food. And the general effect of states of the mind on bodily health is so well known to physicians, that travel, change of scene, and amusement are frequently prescribed by them as remedies for diseases which no drugs can cure. It seems little less than absurd to contend that so much power can be wielded by a thing utterly unsubstantial.

Indeed, one of the most instructive branches of modern physiology is what is called in scientific parlance the power of the imagination in producing and curing bodily ailments. Medical books are full of cases of this kind, and, as more attention is paid to the subject, many more will probably be noted. That pain is often caused by seeing suffering in others, and nausea by the sight or smell of food or drink which has previously occasioned it, is familiar to us all. A fact of a still more extraordinary nature is narrated by a Scotch physician. A woman witnessed the amputation of three of the fingers of her child's hand by a falling window-sash. The surgeon who was called in to dress the child's wounds found the mother also in agony, and

on examination discovered that three of her fingers, corresponding to those injured in the child, were greatly swollen and inflamed. The next day they suppurated and had to be lanced, and subsequently they went through all the stages of recovery from a severe bruise.* Again, a story is related of a lady who saw a child, not her own, but of whom she was very fond, let go a heavy iron gate which it was passing in such a way that she thought its ankle would inevitably be crushed. Straightway she felt an intense pain in her own ankle, and, although the child escaped unhurt, the pain continued, and she had great difficulty in reaching home. On arriving there and taking off her stocking she found a large red ring, as if painted with red currant juice, around the ankle. By the next morning the whole foot was inflamed, and she was kept in bed by it many days. A French surgeon tells of another lady, whose mouth and lips suddenly became enormously swollen, merely from seeing a child pass the sharp blade of a knife between its lips, though without cutting them. Analogous to these cases are those of the *stigmata* produced in pious nuns, whose thoughts have dwelt much on the wounds of the Saviour. Then we have instances of the hair turning perfectly white from anxiety, and of fainting, paralysis, and even death, resulting from fear. It is said that a criminal was once experimented upon by pretending to bleed him to death, his eyes being bandaged and the sensation of flowing blood being imitated with warm water. After a short time he actually died of fright, although not a drop of his blood had been shed. That excessive joy also sometimes causes death is well attested, and its power, like that of grief, to produce fits of hysterics is abundantly known. Other complaints, such as rheumatism, cutaneous inflammation, jaundice, and dropsy, have also been the consequence of violent mental emotions. Anxiety on the part of a nursing mother will seriously impair the health of her babe, and in several instances death, even, has ensued to the child from taking the breast after the mother's indulgence in an outburst of anger. On the other hand, the mind may be successfully employed to counteract morbid conditions of the body arising from extraneous causes. The record of the cures wrought years ago by Perkins's metallic

* Carpenter's Physiology, § 836. Dr. Carpenter vouches for the occurrence.

tractors contains numerous instances where, from merely believing in the efficacy of the instruments, though they were not actually applied, the lame have walked, chronic swellings been reduced, and rheumatism, lockjaw, and various other complaints permanently relieved. Under the action of mesmerism, limbs have been amputated and no pain felt by the patient,—a fact which explains the insensibility of the *convulsionnaires* of St. Medard, who excited so much attention at the beginning of the last century. They were ecstatic nuns, who allowed themselves to be beaten with sticks, pricked with swords, and walked upon by heavy men without suffering, and with no other ill effects than a discoloration of the skin. To the same principle may be ascribed the cures by laying on of hands effected by persons supposed to possess the gift of healing, and the ease with which bread pills are made to do duty for drugs. In one instance, through a misunderstanding of the physician's words, "Take this," as he gave a written prescription to a patient, the paper itself was swallowed, and had all the effect expected from the medicine it called for.* The reading and experience of every one who has paid attention to this subject will furnish numerous other illustrations of the same nature. If evidence can prove anything, it proves that the soul has power over all the functions of the body, and not merely its outward movements; and hence we may infer that it has an equally substantial nature.

Again, there are facts tending to establish the existence of finer atmospheres, which serve the same purpose to the organs of the soul that air does to the ear, and the luminiferous ether to the eye. What is called animal magnetism and hypnotism is now generally conceded to be not altogether a delusion. Mind affects mind by other instruments than merely words and signs. This is attested by the familiar experiment of causing a person to turn round by merely steadily looking at the back of his head, and the equally familiar experience of suddenly thinking of a friend supposed to be far away, and the thought being followed by his approach. Two persons, also, sitting together, will both break out, without previous remark, into speaking of the same subject, indicating a silent communication of ideas from one to the other.

* See Tuke's *Influence of the Mind upon the Body*.

Or, one will think of a musical air, and the other at once begin to whistle or hum it. Women have the faculty of divining the thoughts and feelings of those with whom they associate in a more marked degree than men, or, as it is said, they have more tact than men. Animals, too, who live less abstract lives than human beings, are much more impressible by the workings of these subtler mediums. The common house cat is renowned for finding its way back to a familiar home from great distances and over previously unknown roads. Bees have been known to fly forty miles in search of honey, and they invariably return to their hives in a straight line, although, from the construction of their eyes, the range of their vision is extremely short. Carrier-pigeons traverse sea and land over a route they never saw before, to reach the place in which they were bred. Storks and other birds migrate yearly from north to south and back again, and make their nests always in the same spot. Fishes and various marine animals pass from place to place in the sea in a similar manner, and with unerring accuracy. These things cannot be explained except upon the hypothesis of a guidance received otherwise than by sight, smell, and touch. There must be a finer sense, and this sense must have its appropriate object, which may be identical with the fluid which gives rise to the phenomena of electricity and magnetism, or may be something as yet unknown.

The advantage of thus conceiving of the soul as a substantial organism, analogous to the body and affected by mediums similar to those which affect sight and hearing, is that it explains the mystery which surrounds the relations of mind and matter and accounts for many things which now puzzle the scientific explorer. Only allow the soul to be a real substance coextensive with the body and intimately interwoven with it, and the difficulty experienced by Professor Tyndall and others in perceiving the connection between its operation and the molecular changes of the brain need be no greater than that of perceiving the connection between magnetism and the motion of the magnetic needle. Goethe's poetical fancy of elective affinities between human beings like the chemical affinities between acids and alkalis may be treated as a fact, and serve as a key to those mysterious likings and dislikings which so often baffle inquiry. If, too, we suppose the soul to dwell in the midst of atmospheres similar to those which sur-

round the body, mental sensations become mere modifications of mental fibres and tissues, as bodily functions are variations of the states of bodily organs. The assumption cannot, indeed, be verified by the senses, but it commends itself to the understanding as highly probable.

The same hypothesis, likewise, helps to explain the stories of ghosts and apparitions, of which so many are in circulation. Making every allowance for exaggeration and inaccuracy, the fact remains that men have in some way been induced to believe that they have seen human beings, and held converse with them, under circumstances which precluded the possibility of their presence in material form. Call it imagination or delusion, or what we please, they have been impressed as by a visible object, and heard as it were spoken words, and if this proves nothing else it proves that what we call hearing and seeing may be produced from within as well as from without. In confirmation of this, let the reader only note, as he peruses these lines, how the words sound in his ears, and how, when he pauses to think, his ideas both pass before him as if written or printed, and are heard as if addressed to him by another person. Charles Dickens is reported to have said that when he was composing his novels, every word uttered by his characters was distinctly heard by him before it was recorded on paper. His biographer, Forster, questions the story, but furnishes an extract from a letter of Mr. Dickens, in which he says of his literary work, "I don't invent it, — really do not, — *but see it*, and write it down." His active brain projected the images of its creation into mental space, and they there became visible speaking beings. If now a man can produce this effect on his own mind, why not upon the mind of another? Suppose a friend to be intently thinking of another friend at a distance. It is not difficult to imagine his thought traversing the intermediate space by vibrations akin to those of light, and either presenting itself in visual form or making itself audible to the hearing. The theory was fully elaborated some years ago by a writer in the London "Spectator," who ascribed this species of intercommunication to what he called "brain waves," but we do not know whether his speculations led to any practical results.

It is worthy of note, too, that all the stories of apparitions indicate that they are produced by impressions from within, and not

by objects in external space. They are described as appearing and disappearing instantly, and in disregard of physical laws. The angels, in the Biblical record, do not come flying through the air, and approach gradually, as if from a distance, but manifest themselves, as we are expressly told in the case of the shepherds of Bethlehem, "suddenly." Thus the eyes of the young man who was with Elisha are said to have been opened, in compliance with Elisha's prayer, and he saw the mountain full of horses and chariots of fire round about Elisha, which previously he did not see. So St. Stephen and St. Paul had visions which were invisible to their companions, and St. John prefaces his Apocalyptic utterances by saying that "a door was opened in heaven." The supposition does not detract from the truth, of which these visions were symbols, but by rendering them credible to the scientific mind, adds to their practical value.

The unity of creation, therefore, the analogies of the sensible world, the instincts of mankind, as expressed in thought and speech, the facts of physics and physiology, and, to a limited extent, human experience, all combine to render probable the substantial nature of the soul and the existence of world within that of which our bodily senses take cognizance, which is adapted to the activities of the soul, as the outer world is to those of the body. What is needed now, is the observation and record of facts which shall either controvert or establish the hypothesis, and determine with certainty either that thinking is a mere function of the material brain, or that it must be ascribed to an inner organism, of which that brain and the whole body are but the incarnation and expression. Certainly, the achievements of science, of which we boast so much, are worth but little if they cannot aid us to solve this problem. More than a century ago Swedenborg ended a prologue to an unfinished treatise of the same nature as that of which we have made mention with these memorable words : —

"Let us, then, gird up our loins for the work. Experience is at our side, with a full horn of plenty. The nine virgins are present also, adorned with the riches of nearly two thousand years. I mean, all the sciences, by whose abundance, powers, and patronage the work is constructed. . . . All things at the present day stand provided and

prepared, and await the light. The ship is in the harbor, the sails are swelling, the east-wind blows ; let us weigh anchor and put forth to sea." *

The voyage on which he embarked led him indeed into regions whither no one as yet has been able to follow him, and of the way to which he has given us no chart. He was a Columbus whose discoveries mankind has been unable to verify. But if he was emboldened to set forth with the imperfect information science furnished in his day, surely the time is not far off when some new adventurer, undertaking the task with the advantages of our more perfect equipment, will follow on his track, and pilot us to a satisfactory conclusion.

THOMAS HITCHCOCK.

* The Animal Kingdom, I. 23.